

**WHAT IS CLAIMED IS:**

1. A method of simulating human behavior for interacting with environment,  
5 comprising:  
defining resources that simulate the human behavior based upon resource definitions,  
said resource definitions defining at least cognition, sensory, motor and metacognition  
based upon attributes;  
representing certain internal aspects of said resources in symbolic knowledge;  
10 storing said symbolic knowledge in a predetermined metacognitive memory;  
updating said symbolic knowledge for each of said resources in response to any change  
that is related to said resources; and  
managing said resources for at least one cognitive task based upon said symbolic  
knowledge.  
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2. The method of simulating human behavior according to claim 1 wherein said certain  
internal aspects of said resources include a state of usage and an internal request for usage,  
the usage including certain elements of said symbolic knowledge and certain aspects of  
processing capability of said resources.  
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3. The method of simulating human behavior according to claim 1 wherein said  
attributes are context sensitive.
4. The method of simulating human behavior according to claim 1 wherein said  
25 attributes include psychological and physical status.
5. The method of simulating human behavior according to claim 1 wherein said  
managing is proactive.

6. The method of simulating human behavior according to claim 1 wherein said managing is reactive.

5 7. The method of simulating human behavior according to claim 1 wherein said managing is introspective.

8. The method of simulating human behavior according to claim 1 wherein said change includes an internal change in said resources.

10 9. The method of simulating human behavior according to claim 1 wherein said change includes an external change in the environment.

10. The method of simulating human behavior according to claim 1 wherein said symbolic knowledge includes tasks for defining a predetermined set of the cognitive tasks,  
15 task instances for defining a currently existing instance of the cognitive tasks and models for defining a domain specific application.

11. The method of simulating human behavior according to claim 1 wherein said managing includes prioritizing allocation of said resources, recovering from interruptions,  
20 resolving an internal conflict of said resources.

12. The method of simulating human behavior according to claim 1 wherein said resource definitions include user-definable attributes that are granularly modifiable.

25 13. The method of simulating human behavior according to claim 1 wherein said resource definitions include predetermined attributes.

14. A system for simulating human behavior for interacting with environment, comprising:

an editor for defining resources that simulate the human behavior based upon resource definitions, said resource definitions defining at least cognition, sensory, motor and metacognition based upon attributes;

a cognitive proprioception unit for detecting a change that is related to said resources;

5 a symbolic transformation unit connected to said cognitive proprioception unit for representing certain internal aspects of said resources in symbolic knowledge;

a metacognitive memory for storing said symbolic knowledge; and

a metaconitive control unit connected to said metacognitive memory for managing said resources for at least one cognitive task based upon said symbolic knowledge.

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15. The system for simulating human behavior according to claim 14 wherein said certain internal aspects of said resources include a state of usage and an internal request for usage, the usage including certain elements of said symbolic knowledge and certain aspects of processing capability of said resources.

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16. The system for simulating human behavior according to claim 14 wherein said attributes are context sensitive.

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17. The system for simulating human behavior according to claim 14 wherein said attributes include psychological and physical status.

18. The system for simulating human behavior according to claim 14 wherein said metaconitive control unit manages said resources in a proactive manner.

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19. The system for simulating human behavior according to claim 14 wherein said metaconitive control unit manages said resources in a reactive manner.

20. The system for simulating human behavior according to claim 14 wherein said metaconitive control unit manages said resources in an introspective manner.

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21. The system for simulating human behavior according to claim 14 wherein said cognitive proprioception unit detects said change that is an internal change among said resources.

5        22. The system for simulating human behavior according to claim 14 wherein said symbolic knowledge includes tasks for defining a predetermined set of the cognitive tasks, task instances for defining a currently existing instance of the cognitive tasks and models for defining a domain specific application.

10       23. The system for simulating human behavior according to claim 14 wherein said metaconitive control unit manages prioritizing allocation of said resources, recovering from interruptions, resolving an internal conflict of said resources.

15       24. The system for simulating human behavior according to claim 14 wherein said resource definitions include user-definable attributes that are granularly modifiable.

25       25. The system for simulating human behavior according to claim 14 wherein said resource definitions include predetermined attributes.

20       26. A computer program for providing real-time adaptive decision support, comprising:  
a predetermined set of resources for accomplishing a set of predetermined tasks;  
a cognitive module connected to said resources for executing at least one of the tasks, said cognitive module further including a cognitive scheduler, the task being defined by a  
25 task control declaration and being managed by said cognitive scheduler; and  
a metacognitive module operationally connected to said cognitive module and having a metacognition process control module, a metacognition memory and a metacognition scheduler, in response to said cognitive module said metacognitive module updating symbolic information on self-awareness of said resources in said metacognition memory in  
30 response to any change that is related to said resources, said metacognition process control

module reordering the tasks in said cognitive scheduler based upon said symbolic information and said metacognitive scheduler module.

27. The computer program for providing real-time adaptive decision support according  
5 to claim 26 wherein said metacognition process control module further includes a reactive control module and a proactive control module.

28. The computer program for providing real-time adaptive decision support according  
10 to claim 27 wherein said cognitive module based upon a first portion of said task control declaration triggers control in said reactive control module.

29. The computer program for providing real-time adaptive decision support according  
15 to claim 27 wherein said cognitive module based upon a second portion of said task control declaration updates certain information in said symbolic information in said metacognition memory.